

**U74LVC125A****CMOS IC****QUADRUPLE BUS BUFFER
GATE WITH 3-STATE OUTPUTS****DESCRIPTION**

The **U74LVC125A** consists of four bus buffers with 3-state output controlled by enable input ($\overline{OE}$), when $\overline{OE}$ is high, the output is disable.

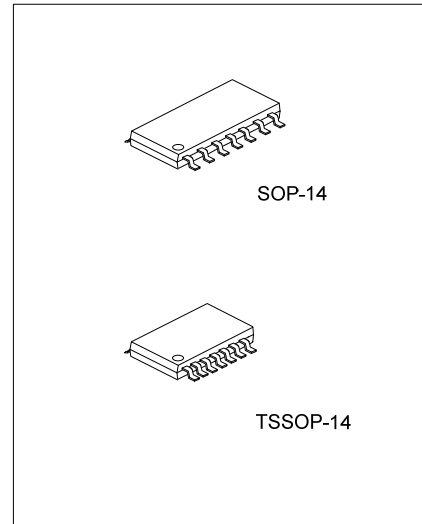
Inputs can be driven from either 3.3V or 5V devices, so the device can be used in a mix 3.3V/5V system.

FEATURES

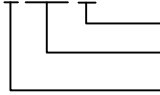
- * Operation Voltage Range: 1.65~3.6V
- * Low Power Dissipation
- * Input Accept Voltage to 5.5V

ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74LVC125AL-S14-R	U74LVC125AG-S14-R	SOP-14	Tape Reel
U74LVC125AL-P14-R	U74LVC125AG-P14-R	TSSOP-14	Tape Reel



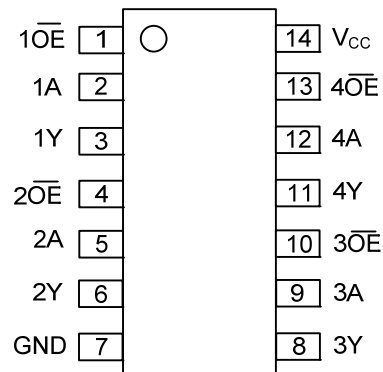
U74LVC125AL-S14-R



- (1) Packing Type
- (2) Package Type
- (3) Lead Free

- (1) R: Tape Reel
- (2) S14: SOP-14, P14: TSSOP-14
- (3) L: Lead Free, G: Halogen Free

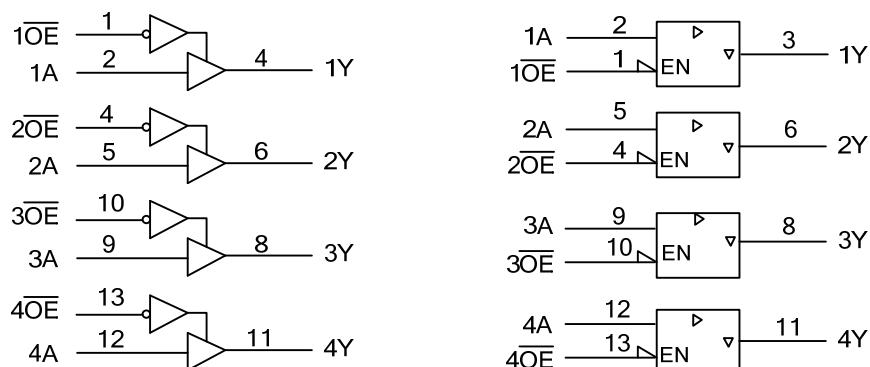
PIN CONFIGURATION



FUNCTION TABLE (each gate)

INPUT		OUTPUT
$\overline{OE}$	A	Y
L	L	L
L	H	H
H	X	Z

LOGIC DIAGRAM (positive logic)



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5~6.5	V
Input Voltage	V_{IN}	-0.5~6.5	V
Output Voltage(active mode)	V_{OUT}	-0.5~ $V_{CC}+0.5$	V
Input Clamp Current($V_{IN}<0$)	I_{IK}	-50	mA
Output Clamp Current($V_O<0$)	I_{OK}	-50	mA
Output Current	I_{OUT}	±50	mA
V_{CC} or GND Current	I_{CC}	±100	mA
Power Dissipation	P_D	500	mW
Storage Temperature	T_{STG}	-65 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}	Operating	1.65		3.6	V
		Data retention only	1.5			
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}		0		V_{CC}	V
Input Rise or Fall Times	t_R, t_F				8	ns/V
Operating Temperature	T_A		-40		125	°C

■ STATIC CHARACTERISTICS (Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V_{IH}	$V_{CC}=1.65V \sim 1.95V$	$0.65 \cdot V_{CC}$			V
		$V_{CC}=2.3V \sim 2.7V$	1.7			V
		$V_{CC}=2.7V \sim 3.6V$	2			V
Low-Level Input Voltage	V_{IL}	$V_{CC}=1.65V \sim 1.95V$			$0.35 \cdot V_{CC}$	V
		$V_{CC}=2.3V \sim 2.7V$			0.7	V
		$V_{CC}=2.7V \sim 3.6V$			0.8	V
High-Level Output Voltage	V_{OH}	$V_{CC}=1.65V \sim 3.6V, I_{OH}=-100\mu A$	$V_{CC}-0.2$			V
		$V_{CC}=1.65V, I_{OH}=-4mA$	1.29			V
		$V_{CC}=2.3V, I_{OH}=-8mA$	1.9			V
		$V_{CC}=2.7V, I_{OH}=-12mA$	2.2			V
		$V_{CC}=3V, I_{OH}=-12mA$	2.4			V
		$V_{CC}=3V, I_{OH}=-24mA$	2.3			V
Low-Level Output Voltage	V_{OL}	$V_{CC}=1.65V \sim 3.6V, I_{OL}=100\mu A$			0.1	V
		$V_{CC}=1.65V, I_{OL}=4mA$			0.24	V
		$V_{CC}=2.3V, I_{OL}=8mA$			0.3	V
		$V_{CC}=2.7V, I_{OL}=12mA$			0.4	V
		$V_{CC}=3V, I_{OL}=24mA$			0.55	V
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=3.6V, V_{IN}=5.5V$ or GND			±1	μA
Output OFF-State current	I_{OZ}	$V_{CC}=3.6V, V_{OUT}=V_{CC}$ or GND			±1	μA
Quiescent Supply Current	I_Q	$V_{CC}=3.6V, V_{IN}=V_{CC}$ or GND $I_{OUT}=0$			1	μA
Additional Quiescent Supply Current	ΔI_Q	$V_{CC}=2.7V \sim 3.6V$, One input at $V_{CC}-0.6V$, other inputs at V_{CC} or GND			500	μA
Input Capacitance	C_{IN}	$V_{CC}=3.3V, V_{IN}=V_{CC}$ or GND		5		pF

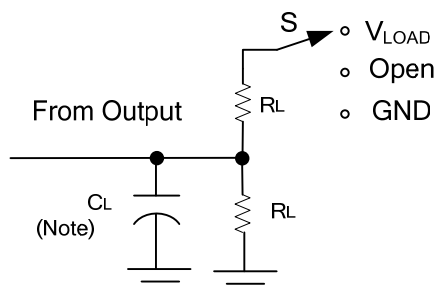
■ DYNAMIC CHARACTERISTICS (T_A=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A) to output (Y)	t _{PLH} /t _{PHL}	V _{CC} = 1.8V±0.15V	1	4.5	11.8	ns
		V _{CC} = 2.5V±0.2V	1	2.7	5.8	ns
		V _{CC} = 2.7V	1	3	5.3	ns
		V _{CC} = 3.3V±0.3V	1	2.5	4.6	ns
Propagation delay from input ($\overline{\text{OE}}$) to output (Y)	t _{PZL} /t _{PZH}	V _{CC} = 1.8V±0.15V	1	4.3	13.8	ns
		V _{CC} = 2.5V±0.2V	1	2.7	6.9	ns
		V _{CC} = 2.7V	1	3.3	6.4	ns
		V _{CC} = 3.3V±0.3V	1	2.4	5.2	ns
Propagation delay from input ($\overline{\text{OE}}$) to output (Y)	t _{PLZ} /t _{PHZ}	V _{CC} = 1.8V±0.15V	1	4.3	10.6	ns
		V _{CC} = 2.5V±0.2V	1	2.2	5.1	ns
		V _{CC} = 2.7V	1	2.5	4.8	ns
		V _{CC} = 3.3V±0.3V	1	2.4	4.4	ns

■ OPERATING CHARACTERISTICS (T_A=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C _{pd}	V _{CC} =1.8V, f=10MHz		7.4		pF
		V _{CC} =2.5V, f=10MHz		11.3		pF
		V _{CC} =3.3V, f=10MHz		15		pF

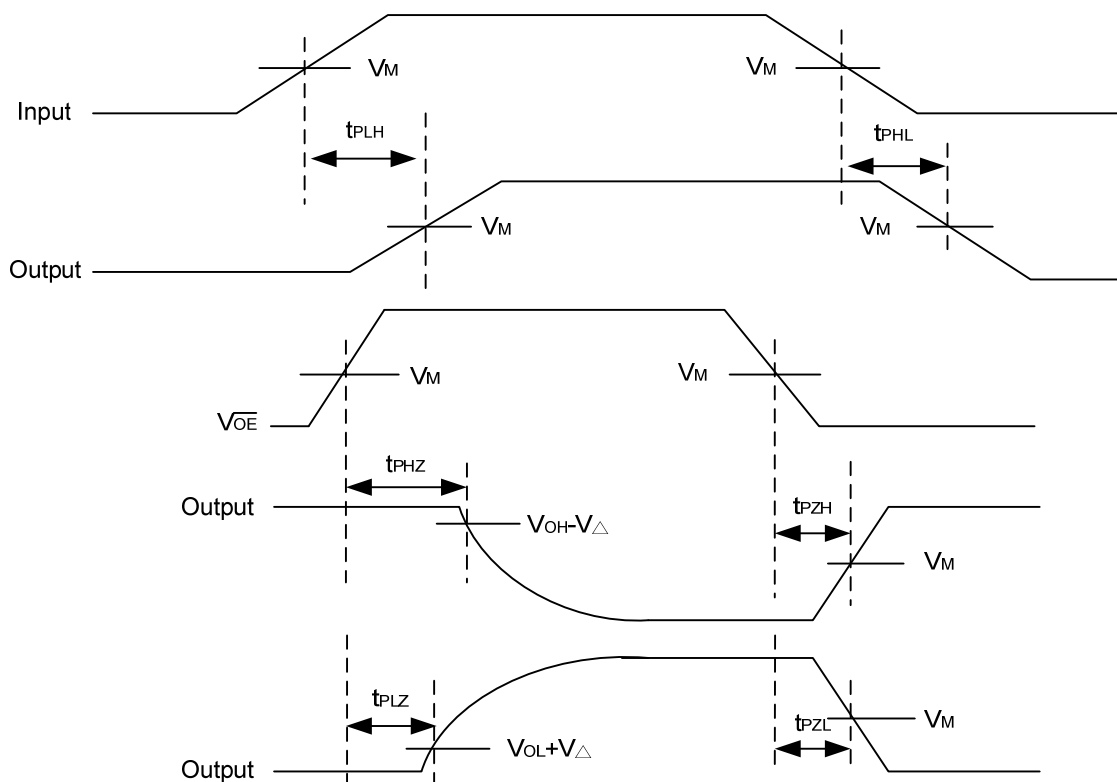
■ TEST CIRCUIT AND WAVEFORMS



TEST	S
t_{PLH}/t_{PHL}	Open
t_{PHZ}/t_{PZH}	GND
t_{PLZ}/t_{PZL}	V_{LOAD}

Note: C_L includes probe and jig capacitance.

V_{CC}	V_{IN}	t_{R}/t_F	V_M	V_{LOAD}	C_L	R_L	V_{Δ}
$1.8V \pm 0.15V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 * V_{CC}$	30pF	1K Ω	0.15V
$2.5V \pm 0.2V$	V_{CC}	$\leq 2ns$	$V_{CC}/2$	$2 * V_{CC}$	30pF	500 Ω	0.15V
2.7V	2.7V	$\leq 2.5ns$	1.5V	6V	50pF	500 Ω	0.3V
$3.3V \pm 0.3V$	2.7V	$\leq 2.5ns$	1.5V	6V	50pF	500 Ω	0.3V



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.